Claims

1. A progressive multifocal lens for correcting eyesight having a progressive refracting interface in a refracting interface on the side of an eyeball or a refracting interface on the side of an object, the progressive refracting interface including a distance portion and a near portion with different refractive powers and a progressive portion of which refractive power varies progressively therebetween, wherein the progressive multifocal lens is characterized in that the eyeball-side refracting interface or the object-side refracting interface is a combined refracting interface composed of an original progressive refracting interface set only to exhibit a desired eyesight corrective characteristic and an original toric surface set only to exhibit a desired astigmatism corrective characteristic, and when the z-axis is an axis passing through the center of the progressive refracting interface from the object toward the eyeball, the x-axis is the cylinder axis of the original toric surface, and the y-axis is an axis perpendicular to the x-axis and the z-axis, value z_p in any point P (x_p, y_p, z_p) in the combined refracting interface is expressed by expression (1) or (2) by using the approximate curvature Cp of the original progressive refracting interface, curvature Cx in the x-axis direction, and curvature Cy in the y-axis direction.

[Numerical Formula 1]

$$z_p = \frac{(c_p + c_x)x^2 + (c_p + c_y)y^2}{1 + \sqrt{1 - \frac{((c_p + c_x)x^2 + (c_p + c_y)y^2)^2}{x^2 + y^2}}} \cdots (1)$$

[Numerical Formula 2]

$$z_p = \frac{(c_p + c_x)x^2}{1 + \sqrt{1 - (c_p + c_x)^2(x^2 + y^2)}} + \frac{(c_p + c_y)y^2}{1 + \sqrt{1 - (c_p + c_y)^2(x^2 + y^2)}} \cdots (2)$$

2. A progressive multifocal lens according to claim 1, characterized in that the eyeball-side refracting interface or the object-side refracting interface opposite to the surface having the combined refracting interface is spherical or rotation-symmetry aspherical in shape.

3. A method for designing a progressive multifocal lens for correcting eyesight having a progressive refracting interface in a refracting interface on the side of an eyeball or a refracting interface on the side of an object, the progressive refracting interface including a distance portion and a near portion with different refractive powers and a progressive portion of which refractive power varies progressively therebetween, wherein the method is characterized by comprising a first step of obtaining an original progressive refracting interface only in order that the eyeball-side refracting interface or the object-side refracting interface exhibits an eyesight corrective

characteristic, a second step of obtaining an original toric surface only in order that the eyeball-side refracting interface or the object-side refracting interface exhibits a desired astigmatism corrective characteristic, and a third step of obtaining a combined refracting interface as the eyeball-side refracting interface or the object-side refracting interface, the combined refracting interface being composed of the original progressive refracting interface set only to exhibit a desired eyesight corrective characteristic and the original toric surface set only to exhibit a desired astigmatism corrective characteristic, wherein in the third step, when the z-axis is an axis passing through the center of the progressive refracting interface from the object toward the eyeball, the x-axis is the cylinder axis of the original toric surface, and the y-axis is an axis perpendicular to the x-axis and the z-axis, value z_p in any point P (x_p, y_p, z_p) in the combined refracting interface is obtained by expression (1) or (2) by using the approximate curvature Cp of the original progressive refracting interface, curvature Cx in the x-axis direction, and curvature Cy in the y-axis direction.

[Numerical Formula 3]

$$z_p = \frac{(c_p + c_x)x^2 + (c_p + c_y)y^2}{1 + \sqrt{1 - \frac{((c_p + c_x)x^2 + (c_p + c_y)y^2)^2}{x^2 + y^2}}} \cdots (1)$$

[Numerical Formula 4]

$$z_p = \frac{(c_p + c_x)x^2}{1 + \sqrt{1 - (c_p + c_x)^2 (x^2 + y^2)}} + \frac{(c_p + c_y)y^2}{1 + \sqrt{1 - (c_p + c_y)^2 (x^2 + y^2)}} \cdots (2)$$